

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C.20231
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

| | |
|--|---|
| Date of mailing (day/month/year) 12 October 2000 (12.10.00) | |
| International application No. PCT/US00/01871 | Applicant's or agent's file reference A-579B |
| International filing date (day/month/year) 27 January 2000 (27.01.00) | Priority date (day/month/year) 03 February 1999 (03.02.99) |
| Applicant YOSHINAGA, Steven, Kiyoshi | |

1. The designated Office is hereby notified of its election made:

in the demand filed with the International Preliminary Examining Authority on:

02 September 2000 (02.09.00)

in a notice effecting later election filed with the International Bureau on:

2. The election was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

| | |
|---|----------------------------------|
| The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland | Authorized officer R. Forax |
| Facsimile No.: (41-22) 740.14.35 | Telephone No.: (41-22) 338.83.38 |

PARENT COOPERATION TREATY

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INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

| | | |
|--|---|--|
| Applicant's or agent's file reference A-579B | FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. | |
| International application No. PCT/US 00/ 01871 | International filing date (day/month/year) 27/01/2000 | (Earliest) Priority Date (day/month/year) 03/02/1999 |
| Applicant AMGEN INC. | | |

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 5 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).
 - b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :
 - contained in the international application in written form.
 - filed together with the international application in computer readable form.
 - furnished subsequently to this Authority in written form.
 - furnished subsequently to this Authority in computer readable form.
 - the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
 - the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished
2. Certain claims were found unsearchable (See Box I).
3. Unity of invention is lacking (see Box II).

4. With regard to the title,

- the text is approved as submitted by the applicant.
- the text has been established by this Authority to read as follows:

POLYPEPTIDES INVOLVED IN IMMUNE RESPONSE

5. With regard to the abstract,

- the text is approved as submitted by the applicant.
- the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

- as suggested by the applicant.
- because the applicant failed to suggest a figure.
- because this figure better characterizes the invention.

None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No

PC 00/01871

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C07K14/705 C12N15/00 C07K16/28

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C07K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category ° | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|--|-----------------------|
| X, P ✓ | <p>WO 99 15553 A (KROCZEK RICHARD ;BUNDESREPUBLIK DEUTSCHLAND LET (DE)) 1 April 1999 (1999-04-01) abstract page 24 claim 2</p> <p>---</p> <p>WO 98 38216 A (JAPAN TOBACCO INC ;TAMATANI TAKUYA (JP); TEZUKA KATSUNARI (JP)) 3 September 1998 (1998-09-03) abstract page 110 -page 115 claim 9</p> <p>---</p> <p>- / --</p> | 1,3-9, 11,13-31 |
| X | | 1,3-9, 11,13-31 |

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

20 July 2000

19. 10. 00

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
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Authorized officer

Panzica, G

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/01871

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|----------|---|-----------------------|
| A | <p>FREEMAN G J ET AL: "CLONING OF B-2: A CTLA-4 COUNTER-RECEPTOR THAT COSTIMULATES HUMAN T CELL PROLIFERATION" SCIENCE, US, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE,, vol. 262, 5 November 1993 (1993-11-05), pages 909-911, XP002069402 ISSN: 0036-8075 the whole document -----</p> | 18,24-31 |

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/00/01871

| Patent document cited in search report | Publication date | Patent family member(s) | | Publication date |
|--|------------------|-------------------------|-------|------------------|
| WO 9915553 | A 01-04-1999 | DE 19821060 | A | 15-04-1999 |
| | | AU 1332099 | A | 12-04-1999 |
| | | EP 1017723 | A | 12-07-2000 |
| ----- | ----- | ----- | ----- | ----- |
| WO 9838216 | A 03-09-1998 | JP 11029599 | A | 02-02-1999 |
| | | AU 6118598 | A | 18-09-1998 |
| | | BR 9807788 | A | 15-02-2000 |
| | | CN 1253567 | T | 17-05-2000 |
| | | EP 0984023 | A | 08-03-2000 |
| | | NO 994146 | A | 27-10-1999 |
| ----- | ----- | ----- | ----- | ----- |

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

1. Claims: 1, 11 and partially: 3-9, 13-31

A polypeptide having a co-stimulatory effect on T-cells, having primary structure as set forth in Seq.Id.No.2, encoded by nucleic acid as set forth in Seq.Id.No.1

2. Claims: partially: 2-10 12-31

A polypeptide having a co-stimulatory effect on T-cells, having primary structure as set forth in Seq.Id.No.7, encoded by nucleic acid as set forth in Seq.Id.No.6.

3. Claims: partially 2-10 12-31

Seq.Id.No.11, Seq.Id.No.12.A polypeptide having a co-stimulatory effect on T-cells, having primary structure as set forth in Seq.Id.No.12, encoded by nucleic acid as set forth in Seq.Id.No.11.

4. Claims: partially: 2-10, 12-31.

A polypeptide having a co-stimulatory effect on T-cells, having primary structure as set forth in Seq.Id.No.17, encoded by nucleic acid as set forth in Seq.Id.No.16.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 00/01871

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 24, 25, 28, 30, 31 are directed to methods of diagnosis and therapy to be practised on the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1,11 and partially: 3-9, 13-31

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

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WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| | | | | | | | | | | |
|--|--|--|------------|----------------------------|----------|----------------------------|-------------------------|------------------|----------|-------------------------|
| (51) International Patent Classification: | A2 | (11) International Publication Number: WO 00/46240 | | | | | | | | |
| C07K 14/00 | | (43) International Publication Date: 10 August 2000 (10.08.00) | | | | | | | | |
| (21) International Application Number: | PCT/US00/01871 | (74) Agents: ODRE, Steven, M. et al.; Amgen, Inc., One Amgen Center Drive, Thousand Oaks, CA 91320-1799 (US). | | | | | | | | |
| (22) International Filing Date: | 27 January 2000 (27.01.00) | (81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). | | | | | | | | |
| (30) Priority Data: | <table><tr><td>09/244,448</td><td>3 February 1999 (03.02.99)</td><td>US</td></tr><tr><td>09/264,527</td><td>8 March 1999 (08.03.99)</td><td>US</td></tr></table> | | 09/244,448 | 3 February 1999 (03.02.99) | US | 09/264,527 | 8 March 1999 (08.03.99) | US | | |
| 09/244,448 | 3 February 1999 (03.02.99) | US | | | | | | | | |
| 09/264,527 | 8 March 1999 (08.03.99) | US | | | | | | | | |
| (63) Related by Continuation (CON) or Continuation-in-Part (CIP) to Earlier Applications | <table><tr><td>US</td><td>09/244,448 (CIP)</td></tr><tr><td>Filed on</td><td>3 February 1999 (03.02.99)</td></tr><tr><td>US</td><td>09/264,527 (CIP)</td></tr><tr><td>Filed on</td><td>8 March 1999 (08.03.99)</td></tr></table> | | US | 09/244,448 (CIP) | Filed on | 3 February 1999 (03.02.99) | US | 09/264,527 (CIP) | Filed on | 8 March 1999 (08.03.99) |
| US | 09/244,448 (CIP) | | | | | | | | | |
| Filed on | 3 February 1999 (03.02.99) | | | | | | | | | |
| US | 09/264,527 (CIP) | | | | | | | | | |
| Filed on | 8 March 1999 (08.03.99) | | | | | | | | | |
| (71) Applicant (for all designated States except US): AMGEN INC. [US/US]; One Amgen Center Drive, Thousand Oaks, CA 91320-1799 (US). | <p>Published <i>Without international search report and to be republished upon receipt of that report.</i></p> | | | | | | | | | |
| (72) Inventor; and | | | | | | | | | | |
| (75) Inventor/Applicant (for US only): YOSHINAGA, Steven, Kiyoshi [US/US]; 644 Lynwood Street, Thousand Oaks, CA 91360 (US). | | | | | | | | | | |

(54) Title: NOVEL POLYPEPTIDES INVOLVED IN IMMUNE RESPONSE

(57) Abstract

Novel polypeptides which comprise a receptor-ligand pair involved in T-cell activation are disclosed. Nucleic acid molecules encoding said polypeptides, and vectors and host cells for expressing same are also disclosed. The polypeptides, or agonists and antagonists thereof, are used to treat T-cell mediated disorders.

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